

THE PHONOGRAM

Vol. I.]

◁ JANUARY, 1891. ▷

[No. 1.]

TABLE OF CONTENTS.

	PAGE
SALUTATORY,	5
AN IMPORTANT SUGGESTION,	6
HOW IT IS DONE,	6
IF IT COULD HAVE BEEN,	7
THEY MUST TAKE A BACK SEAT,	8
OLD MEMORIES,	8
PHONOGRAPHS IN POST-OFFICES,	8
THE LATEST THEORY OF MATTER,	9
HOW IT ORIGINATED,	10
THE TELEPHONE TO PREDICT STORMS,	11
THE PHONOGRAPH IN TEACHING,	11
WATER-POWER AND ELECTRIC DYNAMOS,	11
THERMO-ELECTRIC GENERATORS,	11
CABLE RUBBER BECOMING SCARCE,	12
BOTTLED MUSIC,	12
PRESERVING INDIAN SONGS AND TALES,	12
THE STORAGE BATTERY,	12
HOW SOUND IS REPRODUCED,	13
MUSIC FOR THE DYING,	17
AMONG THE MONGOLS,	17
WHO NEEDS IT MOST?	18
THE TELEPHONE,	18
THE INCANDESCENT LAMP,	19
AS A LETTER-WRITER,	20
IN MISSIONARY SERVICE,	20
ELECTRICITY FOR NAVAL USES,	20
QUADRUPLIX TELEGRAPH,	20
THE PHONOGRAPH AT CLINICS,	21
THE EDISON METER,	21
EDISON DYNAMOS,	21
TELEGRAPHING FROM A MOVING TRAIN,	22
PHONOGRAPH CHAT,	23
PERSONAL EXPERIENCES:—	
REPORTING BY THE PHONOGRAPH,	23
HOW IT WORKS,	24
SPLendid TRIBUTES TO THE PHONOGRAPH,	25
READING NOTICES,	26

THE NORTH AMERICAN PHONOGRAPH CO.,

OWNERS OF THE PATENTS OF THOMAS A. EDISON

—FOR—

Recording, Perpetuating, and Reproducing Articulate Speech,
and Other Sounds, and Exclusive Agent for
the Sole Licensee of the

AMERICAN GRAPHOPHONE COMPANY.

PRINCIPAL OFFICES: 160 TO 164 BROADWAY, NEW YORK.

LOCAL COMPANIES.

NAME OF COMPANY.	ADDRESS.	TERRITORY.
Alabama Phonograph Co.	Anniston, Ala.	Alabama.
Columbia	Washington, D. C.	Delaware, Maryland, and Dist. of Col.
Colorado	Denver, Col.	Colorado.
Cent'l Nebraska	Kearney, Neb.	Western part of State of Nebraska.
Chicago Cent'l	Chicago, Ill.	Cook County, Illinois.
Eastern Penn'a	Philadelphia, Penn.	Eastern part of State of Pennsylvania.
Florida	Jacksonville, Fla.	Florida.
Georgia	Atlanta, Ga.	Georgia.
Iowa	Sioux City, Iowa.	Iowa.
Kansas	Topeka, Kan.	Kansas and New Mexico.
Kentucky	Louisville, Ky.	Kentucky.
Michigan	Detroit, Mich.	Michigan.
Missouri	Minneapolis, Minn.	Missouri, Arkansas, and Indian Ter.
Minnesota	Minneapolis, Minn.	Minnesota.
Montana	Helena, Mont.	Montana.
New England	Boston, Mass.	New England States.
New York	New York, N. Y.	New York State.
Nebraska	Omaha, Neb.	Eastern part of State of Nebraska.
New Jersey	Newark, N. J.	New Jersey.
Ohio	Cincinnati, Ohio.	Ohio.
Old Dominion	Roanoke, Va.	Virginia, North and South Carolina.
Pacific	San Francisco, Cal.	Arizona, California, and Nevada.
Spokane	Spokane Falls, Wash.	1 Oregon, East 44° long. 1 Washing'n. " 44° " and Idaho.
South Dakota	Sioux Falls, So. Dak.	South Dakota.
State Phono. Co. of Illinois	Chicago, Ill.	State of Illinois, exclusive of Cook Co.
Texas Phonograph Co.	Galveston, Tex.	Texas.
Tennessee	Nashville, Tenn.	Tennessee.
West. Penn.	Pittsburgh, Penn.	West. part State Pa. and W. Virginia.
Wisconsin	Milwaukee, Wis.	Wisconsin.
West Coast	Portland, Ore.	1 Oregon, West of 45° long. 1 Washing'n. " " 44° "
Wyoming	Cheyenne, Wy. Ter.	Wyoming.

THE PHONOGRAM

The Official Organ of the Phonograph Companies of the U. S.

Canst thou send lightnings, that they may go and say unto thee, Here we are?—JOB XXXVIII. 35.

A MAGAZINE devoted to all interests connected with the recording of sound, the reproduction of speech, the Telephone, the typewriter, and the progress of Electricity.

PUBLISHED MONTHLY.

TERMS: ONE YEAR, \$1.00
SINGLE NUMBERS, .10
Postage Prepaid.

V. H. McRAE, Manager,
Pulitzer Building, Room 127. NEW YORK.

ADVERTISEMENTS.

THE PHONOGRAM, having special facilities in its circulation through the vast commercial system occupied by the Phonograph, Telephone, and other Electrical Devices, presents an exceptionally valuable advertising medium. The rates are reasonable and will be furnished on application.

Communications on the above subjects from persons practically acquainted with them will be gladly received.

Salutatory.

ONE of the miraculous products of human ingenuity which is now revolutionizing business methods and causing the credulous to exhaust their vocabulary in expressions of amazement is the little instrument from which our magazine derives its name. That the phonograph should have introduced itself to the public, and quickly taken its place among the labor-saving devices of the age, is no marvel, though literally it speaks to the few. Its audience is limited; its voice does not reach the multitude. Although an organ itself, it is not so widely represented in the world of public opinion as it should be by an organ that visits the offices and homes of the people, and tells its story there.

The object and scope of the PHONOGRAM in its present shape, therefore, may easily be inferred. It is to familiarize the public with the good qualities of its namesake, to preserve the record of its growth while it moves forward to the achievement of the highest possible good, and to illustrate the part it performs in the work of human progress.

Since the appearance of the first machine the phonograph has undergone many changes; but,

from the moment when its feeblest accents were heard, merely recording the echoes of the human voice, until now, when it has become of supreme practical value in many of the most urgent affairs of life, not an iota of the interest that marked its introduction has been abated.

Whether it be the statesman who has discovered a new method for formulating the speech he will deliver on the morrow; the scientist who would reproduce grave problems; the merchant who dictates his letters; the lawyer who prepares his briefs; or the family who would preserve the dying whisper of the loved ones—all who have used the phonograph recognize in it an agency with which they would not willingly dispense, and feel a concern in its development that justifies a publication of this character.

It is also a part of our plan to keep pace with the progress of electricity in its application to the most useful ends; and, if improvements shall be made in the typewriter or the telephone—hand-maids, so to speak, of the phonograph—they, likewise, will find a place in the columns of our magazine.

Furthermore we can make no promise, save that we shall every month endeavor to present, in sprightly garb, all topics of current value pertaining to our special field of labor.

V. H. McRAE.

As we go to press we learn that the executive committee of the North American Phonograph Company has ordered that on and after December 15, 1890, the public shall be given the option of purchasing phonographs and phonograph-graphophones. This is a step in the right direction, and we predict an immense increase in the use of talking-machines from this time forward.

An Important Suggestion.



It has been suggested that there is danger of too much attention being given by the managers of the local companies to the "coin-in-the-slot" device at the expense of the more legitimate business of the companies, of introducing the phonograph into general use among business men. I have always been of the opinion that the exhibition of the phonograph for amusement purposes was liable to create a wrong impression in the minds of the public as to its actual merits for other purposes.

The immediate revenue derived from the "coin-in-the-slot" device has been so large as to make this branch of the business very popular among the local companies. I think that it should be controlled by a separate department in each company, leaving the manager and his assistants free to devote their whole attention to the more important work of placing machines.

Too much consideration cannot be given to this suggestion, as upon it is based the ultimate success of the whole enterprise, and those companies who fail to take advantage of every opportunity of pushing the legitimate side of their business, relying only upon the profits derived from the "coin-in-the-slot," will find too late that they have made a fatal mistake.

I think, also, that the "coin-in-the-slot" device is calculated to injure the phonograph in the opinion of those seeing it only in that form, as it has the appearance of being nothing more than a mere toy, and no one would comprehend its value or appreciate its utility as an aid to business men and others for dictation purposes when seeing it only in that form. It therefore behooves all who are interested in its success to counteract the false impression liable to be thus engendered by every means in their power.

How It Is Done.

THE N. A. P. Co. runs a music factory on an extensive scale at Jersey City, where thousands of fresh airs are turned out on wax every month. The companies that handle the talking and singing machines in various parts of the country are making some records on their own account, each company having its specialty. For instance, the Washington company is making a specialty, just at present, of band music; the Kentucky company goes in almost exclusively for negro business—plantation dialogues, with banjo solos interspersed, and scenes on the levee—and so with others. While the band plays into the great horns, an expert manipulates the machines. * Each phonograph being supplied with a smooth and fresh cylinder of wax, the expert in charge shouts into each horn separately the title of the piece to be played. When he has done this the electric motor is turned on again, the cylinders revolve beneath the recording needles, the band starts up at a signal and the music pours into the big trumpets until each cylinder is as full of sound impressions as it can hold. Then the expert holds up his finger and the band comes to a full stop at the end of the next musical phrase. The full cylinders are taken off the instruments and put aside in pasteboard boxes, and fresh ones are put on. After the title of the next piece has been shouted into each horn, the band starts up again at the signal and the process is repeated. Now and then, if there is a little space left at the end of the cylinders, the band indulges in a wild burst of applause, stamping and shouting in approbation of its own performance. This passes for demonstration by a supposititious audience, of course, when one hears the phonograph reproduce it. All the cylinders are tested before being sold, to make sure that they are perfect, about 10 per cent. of them being rejected as being defective. Selling at from \$1 to \$2 each, there is a fair profit

on them, after the musical performers have been paid. They are hired just as for public playing, and at the same rates. Quartettes and solos are done the same way. The distance at which the players or singers stand from the horns depends upon the volume of sound produced. A cornet

player, doing a solo, stands ten feet away, and even thus the notes are apt to be so loud and piercing to the ear, when reproduced by the phonograph, as to be positively painful. A quartette stands two feet from the horns, while a solo singer gets as close as possible.

IF IT COULD HAVE BEEN.

A RETROSPECT, BY COL. ROBERT G. INGERSOLL, IN WHICH HE LAMENTS THE ABSENCE OF THE PHONOGRAPH.

WHAT OUR "RECORDER" RECEIVED FROM THE FAMOUS LAWYER'S LIPS.



HE savage man in many ways conveys his thoughts to others. He accomplishes this by marks on trees, by the breaking of boughs, and by tracings in the dust.

After a while he takes another step, and makes rude pictures, to give to others the ideas in his mind. If the horse is used for a sign, he makes a picture of the whole animal. Afterward there grows up a kind of stenography, and he makes only the head of the horse and in the same way he abbreviates the other pictures. At last he represents the various beasts by some one peculiarity, so that the curve of the nostril stands for a horse, a horn for an ox, an ear for a donkey—and in this way he is enabled to say a great deal with few marks.

Then he takes another step. Instead of using pictures, or the representations of pictures, to give his thoughts, he uses marks that stand for words, and then what we call writing commences. In this way he gives to others a record of his brain.

After all, nothing seems more wonderful than language and nothing more ingenious than the marks that stand for words and become the vehicles of thought. When we think of it, what a mystery it seems that we can take in our hands a few sheets of paper bound together, covered with a few black

marks, open these leaves and receive the thoughts and fancies of men and women centuries dead—that we can thus receive messages from dust that was scattered many generations ago.

In a thousand years from now it will not only be possible to get ideas and fancies of the dead—not only to receive their thoughts, but to hear their actual voices.

Without doubt, the phonograph is one of the most surprising of all inventions, and what is more surprising is, that it is one of many children born of the same marvelous brain. It may not now seem of great importance to give the voices of the present day to the men and women of the future, but certainly the present wishes that it could hear the voices of the past. Think of the pleasure it would give us now to hear the great poems, the great paragraphs of literature, repeated by their authors.

For my part, I most sincerely wish that there had been a phonograph in the Garden of Eden. How convincing it would be if we could now hear the dialogue between Jehovah, Adam, Eve, and the Serpent. Probably if we could hear that Serpent's voice, we would no longer wonder that Eve was led away.

If the strange witch of Endor had had a phonograph when the ghost of Samuel rose from the dead, having been disquieted, she could have preserved not only his words but

his voice. To know exactly how a ghost speaks, and to hear again the tones of one long dust, would stop the mouth of heresy and smooth the lip of scorn.

So, if Balaam had been in possession of one of these ingenious instruments, the words and voices of the angel and of the patient animal could have been preserved and could have been used by missionaries in every land.

If, when Job was answered out of the whirlwind, the voice could have been preserved and repeated through all the years, the Humboldts and the Darwins would have been dumb.

And finally, if communication of this character could by any possibility be established between this and the other worlds, so that all people, no matter whether educated in theological seminaries or not, could receive a direct revelation by exchange of phonographic cylinders, or by the establishment of telephonic communication, this would do away with all sectarian disputes, tear down all the walls of caste, and all the thorny hedges of hatred—make friends and brothers of us all.

In fact, it is hard to overestimate what the phonograph and telephone may do. Let us hope that, in a few years, we can say: "Hello, Central—give me 'New Jerusalem.'"

R. G. INGERSOLL.

They Must Take a Back Seat.



EVER since the introduction of the phonograph many of the stenographers of the country have maintained an active opposition to it, believing that it interferes with their money-making privilege.

The truth is, however, that it is one of the most important adjuncts to the profession of a reporter that can be conceived. The transcription of a day's testimony, for instance, is a tedious and exhausting operation, requiring two or three amanuenses to

whom the matter is dictated. Now, however, the reporter may read his notes to the phonograph as rapidly as he pleases, and leave to his amanuenses the task of transcription, thus saving nine-tenths of his time. The stenographer who does not recognize this advantage doesn't know his business. When the typewriter was introduced, it encountered at his hands precisely the same prejudice, but Edison has euchred him at every point of the game.

Old Memories.

A FIELD that is now opening is the peddling of phonographic accounts of speeches, sermons, concerts, dramas, and operas. It will be a very simple matter before many years are past for a man to have delivered at his house on Sunday afternoon any sermon that was preached in the city in the morning; a lawyer to hear the testimony given in some case in which he is interested; for an invalid of musical tastes to hear a diva who sang the leading part in an opera the previous evening, or for a jury to listen to the examination of a criminal taken long before by the minor magistrate. In fact, there seems to be almost no limit to what can be done in this respect. In regard to those utterances which have a great intrinsic, artistic ability, it is said to be already possible to reproduce them wholesale in metal, and so enjoy any desired work a thousand times over in the masterpieces of each great singer or actor with the same facility as they now do wood-cuts or even paper.

Phonographs in Post-Offices.

MEXICO has not heretofore been noted for beating this country in the application of modern improvements, especially in governmental departments; but a notice recently received by the Post-Office Department in Washington shows that she is going to take the lead of her big sister republic in one direction.

That notice is to the effect that an arrangement has been made by the Mexican government for placing in all of the post-offices of that country phonographs for the use of the public. The cylinders are to be sent in the mails as first-class matter. The phonographs are to be managed by a company which will pay a specified proportion of the receipts to the government.

This application of the talking-machine will naturally be much more popular in a country that has a large percentage of illiterate persons in its population, than in the United States, where comparatively few who

desire to use the mails cannot read or write. Of course, in Mexico, for a long time, if not always, the official or government phonograph will have to be used at both ends—that is, the receiver as well as the sender, will have to go to the post-office, for very few, indeed, will have instruments in their own homes into which they can place the little cylinder received by mail, and grind out the messages. Of course, also, fees will be charged for the use of the phonographs, which added to the postage, will make correspondence considerably more expensive than when carried on by writing.

THE LATEST THEORY OF MATTER.

[Written for THE PHONOGRAM.]

BY JULIAN HAWTHORNE.



THE nature of matter has long been a favorite problem of philosophers; for a thorough understanding of material phenomena depends upon its elucidation. The atomic theory has met with a wider acceptance than any other; but it involves the hypothesis of an unexplained step between the palpable and the impalpable—between substance (in the common interpretation of the word) and ether. The theory we are about to consider, while not rejecting what is useful in the atomic scheme, improves it by the addition of an interesting detail.

By the constitution of our minds, as well as by analogy, we are prone to expect homogeneity in nature—an unbroken series of evolutions from the first stage to the latest.

We know by induction that space is occupied by ether; for the light of the stars could reach us only by vibrations, and these vibrations could only be conveyed by a medium—they will not be transmitted through an absolute vacuum. Therefore, though ether is not within the scope of our senses, it is revealed to our logic. All other

material phenomena, from atmospheres and gases down to metals and minerals, are more or less easily sensible. But how bridge over the gap between ether and the most ethereal of gases? We are already compelled to suppose that ether permeates all other substances—that after eliminating everything else, ether will remain. Is it not conceivable, then, that all other substances may be simply varying states of this universal, underlying substance; which states, as apprehended by our senses, constitute the different objects and phenomena of our daily physical existence?

The most primitive of sensible phenomena is the vortex. Every smoker knows what the vortex is; the rings of smoke which he projects from his month are vortices. They have a peculiar motion, and, in a perfect fluid, would be indestructible. They have rigidity and they produce effects; if, for example, a vortex of smoke or air be projected at a candle flame, the flame will disappear—not as if it were blown out, but as if it were annihilated. But the atmosphere is not a perfect fluid, therefore such vortices as we are able to create speedily are dissipated. Ether, however, is a perfect

fluid and a vortex existing in ether would be permanent and indestructible. It may be observed here, that vortices are not necessarily circular; their shape depends upon the vibrating impulse; but they will always be annular and their peculiar motion will always persist.

Let us now suppose that the atoms of the atomic theory are vortices. They must, of course, have some kind of form and structure; and the vortex, as we have seen, is the most primitive of structures. We are then obliged to assume only an original impulse creating vortices in ether and of ether; in other words, to assume some origin to motion; an assumption necessary to all theories of existence. Portions of ether we will say are differentiated by vortex motion; they thus become virtually solid particles, yet with no transition of substance. They are neither to be destroyed nor created; they are whirling rings of ether, capable of definite vibrations, of free movement, and of collision; and their crimpings and crimpings illustrate the way atoms may vibrate.

It is agreeable to reason to conceive of the universe as one universal substance, homogeneous, continuous and simple in structure, existing equally everywhere; some portions of it at rest, or merely transmitting light undulations; others, rectilinear motion—in vortices—and therefore permanently differentiated from the rest of the medium. These whirling particles will then constitute what we call matter; their motion suffices to give them rigidity, and of them our own vortices and all other material objects are composed. And this conception of creation is one continuous substance pervading all space, capable of being "sheared" into positive or negative electricity which, in whirls, constitutes matter, transmitting, not by impact but by continuity every possible material action and reaction. This is the modern view of ether and its functions, as formulated by Sir William Thompson, and adopted by the English philosopher,

Lodge, in a recent volume. It seems to bring us very near the origin of things; since, if man could produce ether vortices, he would create matter, and be able to control it. But that "if" is as long and broad as creation itself; and the theory, instead of augmenting man's powers in this direction, but serves to show us more distinctly one insurmountable limitation.

How It Originated.



HILE working as a telegraph operator—reading by sound—Thomas A. Edison found that he was unable to keep up with the operator in Cincinnati, one of the quickest dispatchers in the business. The necessity of "taking" what that operator sent made him an inventor.

He arranged the old Morse registers in such a way, that by running a strip of paper through them, the dots and dashes were recorded on the first instrument as fast as the Cincinnati operator dispatched them, and were transmitted to him through the other instrument at any desired rate of speed. The words would come on one instrument at the rate of forty a minute, while Edison would grind them at the rate of twenty-five—a number he could readily write out on "the manifold."

By this rude automatic recorder Edison was led to invent the phonograph. He had worked out an instrument which would repeat a message any number of times, and at any rate of speed. While experimenting with the telephone, this idea occurred to him:

"If the indentations on paper could be made to give forth again the click of the instrument, why could not the vibrations of a diaphragm be recorded and similarly reproduced?"

He rigged up an instrument, and pulled a strip of paper through it, at the same time shouting, "Halloo!" A friend then pulled

the paper through again, while Edison listened, and heard a distinct sound, which a strong imagination might have translated into the original "Halloo!"

His friend wagered a barrel of apples that he could not make the thing go. Edison made a drawing of a model, took it to an instrument maker, and told him it was a talking-machine. The man grinned, thinking it a joke, but soon had the model ready. Edison arranged some tin-foil on it, and spoke into the machine—the maker looking on incredulously; but when Edison arranged the machine for transmission, and both men heard a distinct sound, the doubting instrument-maker nearly fell down from the shock, so frightened was he. Edison himself was a little scared, but he was glad to get a barrel of apples from his skeptical friend. The *Youth's Companion* says this was Edison's first practical experiment on the phonograph.

The Telephone to Predict Storms.



THE telephone is about to have a new application—that of foretelling storms. A new discovery has been made as to one of the properties of this means of transmitting sound. By placing two iron bars at seven or eight metres distance from each other, and then putting them in communication on one side by a copper wire covered with rubber, and on the other side with a telephone, a storm can be predicted at least twelve hours ahead through a dead sound heard in the receiver. According as the storm advances, the sound resembles the beating of large hailstones against the windows. Every flash of lightning, and, of course, every clap of thunder that accompanies the storm, produces a shock similar to that of the stroke of a stone cast between the diaphragm and the instrument.

All the atmospheric disturbances are dis-

tinguished by noises more or less intense, which all who are familiar with the use of the telephone will detect. This new discovery will render incalculable service to all our meteorological observers.

The Phonograph in Teaching.

THE phonograph is used in the College of Milwaukee as an aid to the Professor of Languages. It never tires, and can be made to repeat the same phrase or the same word hundreds of times. The teacher, while addressing the class, speaks into the phonograph, which, in turn, repeats the lesson as often as desired.

Water-Power and Electric Dynamos.

THE Commune of Collias, Department of Gard, France, with only 645 inhabitants, has just set up electric lights. It has availed itself of a watercourse which sheds about 264 gallons a second over a fall of about four feet. During the daytime this power is used to force water up for the use of the commune, and at night to light the place. It works a dynamo which feeds 100 lamps of from 10 to 16 candle-power. The municipality provides 25 of these lamps, of 16 candle-power. *L'Electricien* states that before ten years there will not be a commune in France, however small, that has a waterfall in its vicinity, that will not be lit up with electricity.

Thermo-Electric Generators.

L'ELECTRICIEN states that the United States is noted for the great number of patented inventions for the direct transformation of thermic into electric energy—the solution of which problem is of so much importance, and yet so difficult. In spite of all the claims put forward, the thermo-electric generator has yet to be invented; and all these fancy inventions would not secure the honor of publicity were they not signed with a name justly celebrated for other reasons.

Cable Rubber Becoming Scarce.

SUBMARINE telegraphy will soon be deprived of the rubber that is needed in the present stage of the science. The only natural region of their production is Malaysia, and the forests there are fast disappearing. The Indians in clearing them have, during the last forty years, prevented the reproduction and multiplication of the rubber trees. The kinds that were sought at the beginning of the business are rarely found, and those that have taken their place will share the same fate before fifteen years more. Exportation of the rubber is beginning to die out in the Malay ports. The inadequate plantings undertaken in the Dutch Indies consist not of the best qualities, but are of those species whose *latex* is most abundant—that is, of the least valuable kinds. Such is the statement of M. Seralas, presented to the French Academy of Sciences.

According to the same gentleman, the word *gutta* (*guctah* or *gucutta*) in Malay means gum or glue, in general; *pertcha* or *perfia* (which the French alone pronounce *perka*), a *tatter* or *rag*, and accurately describes the tatters or rags of gum half-reduced to a paste and pressed.

Bottled Music.

A WASHINGTON correspondent of the Boston Transcript says: The Marine Band which may be called the President's own, inasmuch as it supplies all the music at the White House, is rendering itself immortal just at present by having its most harmonious strains bottled in large quantities. When the performers in this wonderful band are all dead and gone, people will still be able to hear it play. Every afternoon it gives a concert in a room on E Street below Seventh, to which no listeners are admitted save five phonographs. The instruments

stand in a row on tables, and each of them is equipped with an enormous brass horn. In front of the horns the band discourses the loveliest airs in its repertoire, which are thus recorded on wax cylinders imperishably, for the entertainment of people in all parts of the United States, who have simply to drop a nickel in the slot and listen to the concert

Preserving Indian Songs and Tales.

DR. J. W. FEWKES has turned the phonograph to a novel use. Dr. Fewkes has devoted a great deal of time and attention to the history of the Passamaquoddy Indians, many of whose legends are remarkable for their beauty. He has also succeeded in recording by the phonograph for the edification of future generations, a number of songs, tales, and conversations of the Passamaquoddies, which can now be listened to with intense interest, and, in the days to come, will assume very high historical value as mementos of a departed race.

The Storage Battery.

SKILLFULLY handled, says the *Electric World*, the storage battery can accomplish a great deal, but without intelligent care it is liable to prove anything but satisfactory. It has been especially neglected in popular works and even text-books on electricity, and the average man who is well informed on other electrical matters usually has very vague ideas as to the practical management of accumulators. It is to be hoped that this unfortunate condition of things will not long continue, for in the accumulator the electrical industry has a very useful servant, although one that must be rather gently treated. The storage battery of to-day is very much more practical than that of five years ago. It requires less attention, and is less likely to deteriorate.

HOW SOUND IS REPRODUCED.

AN ARTICLE BY THOMAS A. EDISON, THE FATHER OF THE PHONOGRAPH.

A MARVEL IN MECHANISM.

SO much has been written on the subject of the phonograph and its future, that I can add little that is new to what has been

nish you, even though at the risk of repetition, with a review of some of the thoughts that are germane to the general subject.



THOMAS A. EDISON.

said ; but, obedient to a desire to promote the welfare of a publication like the PHONOGRAM, devoted, as it is, to interests in which I am naturally concerned, I cheerfully fur-

In my article twelve years ago I enumerated among the uses to which the phonograph would be applied: 1. Letter-writing and all kinds of dictation, without the aid

of a stenographer. 2. Phonographic books, which would speak to the blind people without effort on their part. 3. The teaching of elocution. 4. Reproduction of music. 5. The "Family Record," a registry of sayings, reminiscences, etc., by members of a family, in their own voices; and of the last words of dying persons. 6. Music-boxes and toys. 7. Clocks that should announce, in articulate speech, the time for going home, going to meals, etc. 8. The preservation of languages, by exact repro-

Every one of these uses the perfected phonograph is now ready to carry out. I may add that, through the facility with which it stores up and reproduces music of all sorts, or whistling and recitations, it can be employed to furnish constant amusements to invalids, or to social assemblies, at receptions, dinners, etc. Any one sitting in his room alone may order an assorted supply of wax cylinders, inscribed with songs, poems, piano or violin music, short stories, anecdotes or dialect pieces, and, by



RESIDENCE OF THOMAS A. EDISON.

duction of the manner of pronouncing. 9. Educational purposes; such as preserving the explanations made by a teacher, so that the pupil can refer to them at any moment; and spelling, or other lessons placed upon the phonograph for convenience in committing to memory. 10. Connection with the telephone, so as to make that invention an auxiliary in the transmission of permanent and invaluable records, instead of being the recipient of momentary and fleeting communications.

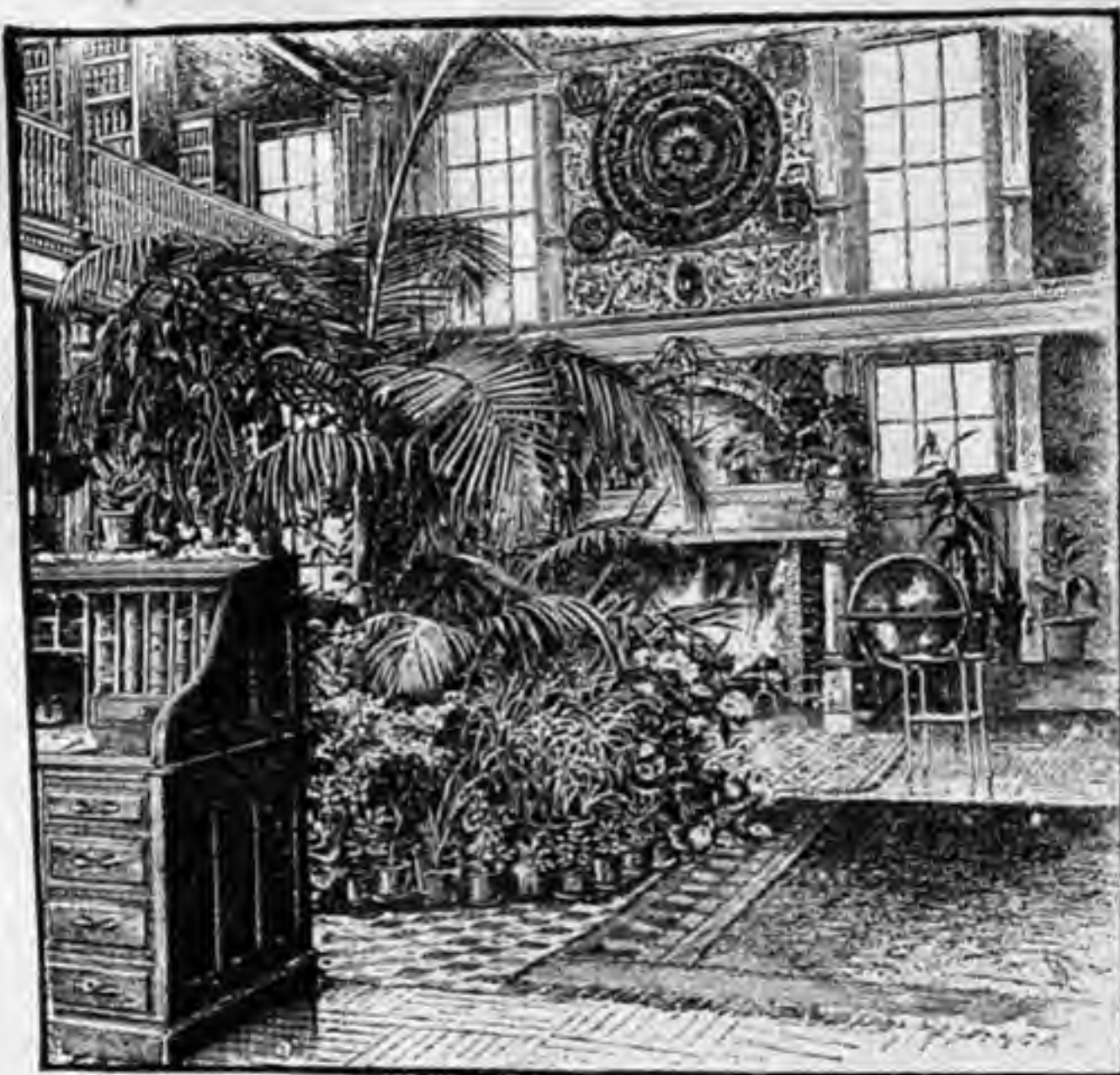
putting them on his phonograph, he can listen to them as originally sung or recited by authors, vocalists, and actors, or elocutionists. The variety of entertainment he thus commands, at trifling expense and without moving from his chair, is practically unlimited. Music by a band—in fact, whole operas can be stored up on the cylinders, and the voice of Patti singing in England can thus be heard again on this side of the ocean, or preserved for future generations. On four cylinders, eight-inches long, with a

diameter of five, I can put the whole of *Nicholas Nickleby* in phonograph form. In teaching the correct pronunciation of English, and especially of foreign languages, the phonograph as it stands seems to be beyond comparison, for no system of phonetic spelling can convey to the pupil the pronunciation of a good English, French, German or Spanish speaker, so well as a machine that reproduces his utterance even more exactly than a human imitator could.

The speeches of orators, the discourses

may be set up in type without any preliminary of writing it out in longhand.

The wax cylinders can be sent through the mails in the little boxes which I have prepared for the purpose, and then put upon another phonograph at a distant point, to be listened to by a friend or business correspondent. To obviate the difficulty caused by the friend's not having a phonograph of his own, pay-stations can be established, to which any one may take the phonogram that he has received, have it



EDISON'S LIBRARY.

of clergymen, can be had "on tap" in every house that owns a phonograph. It would not be very surprising if, a few years hence, phonographic newspaper bulletins should be issued on wax cylinders. Even now, so soon as the phonograph comes into general use, newspaper reporters and correspondents can talk their matter into the phonograph, either in the editorial office or at some distant point, by a telephone wire connected with a phonograph in the composing room, so that the communication

placed on the instrument and the contents recited to him from the machine, as well as copied out at the same moment by a typewriter. Thus the phonograph will be at the service of every one who can command a few cents for the fee. And which of us would not rather pay something extra in order to hear a dear friend's or relative's voice speaking to us from the other side of the earth?

Authors can register their fleeting ideas and brief notes on the phonograph, at any

hour of the day or night, without waiting to find pen, ink or paper, and in much less time than it would take to write out even the shortest memoranda. They can also publish their novels or essays exclusively in phonogram form, so as to talk to their readers personally; and in this way they can protect their works from being stolen by means of defective copyright laws. Musical composers, in improvising compositions, will be able to have them recorded instantaneously on the phonograph.

All phonographs are of uniform size, so that a record put upon the machine in New York may be placed on another machine of the same pattern in China, and speak exactly as it was spoken to on this continent. Each wax blank will receive from eight hundred to one thousand words; and, of course, several blanks may be used for one document, if needed. This uniform size and pattern render the instrument perfectly practicable in offices which have business connections all over the globe. My private secretary to-day speaks all letters into the phonograph, from which they are taken off by a typewriter or an ordinary longhand writer, with an immense saving of time and trouble. Persons having a large correspondence can talk all their letters into the phonograph in a very short time, and leave them to be listened to and copied by an assistant without the delay involved in stenography, or the trouble of going over and correcting the copyist's work, which is almost inevitable under the conditions of dictation now prevailing.

Furthermore, two business men, conferring together, can talk into the recorder, by means of a double transmitting tube, with perfect privacy, and yet obtain upon the cylinder an unimpeachable transcript of their conversation in their own voices, with every break and pause, every hesitation or confident affirmation, every partial sugges-

tion or particular explanation, infallibly set down in the wax.

They can then have this conversation written out or typed by a secretary, for future reference; or can, if they prefer, have it multiple-copied by our mechanical process. In this way many misunderstandings may be avoided. Interesting philosophic or literary discussions and dialogues may be recorded in the same way. In fact, the phonograph will do, and does at this moment accomplish, the same thing in respect of conversation which instantaneous photography does for moving objects—that is, it will present whatever it records with a minute accuracy unattained by any other means.


A telephone subscriber can place at his telephone a phonogram which will announce to the exchange, whenever he is called up, that he has left the office, and will return at a certain time. Similarly, one man calling at the office of another, and not finding him, will talk into the phonograph anything he wishes to say. This saves the trouble of writing a note, and obviates the uncertainty of giving to the clerk, office-boy, or servant, an oral message that may be forgotten or incorrectly delivered. Hotels and clubs will naturally find this function of the phonograph extremely serviceable, and their guests or patrons will avail themselves of the phonograms constantly.

It must be borne in mind that I am not talking now of things which may be possible in the future. I did my predicting ten years ago; and the functions above mentioned are those which the present perfected phonograph is able to fulfill at this moment. To use the phonograph, a little instruction and practice are needed; but much less than the typewriter requires, and hardly more than the training needed for the operation of a sewing-machine.

THOMAS ALVA EDISON.



Music for the Dying.

 PATHETIC story came to us from the far West. After a painful illness of three years, says the *San Juan Examiner*, the wife of Judge John A. Read passed away. Among the circumstances attending her illness, was an unique illustration of the uses to which modern scientific invention may be put in alleviating human suffering.

Mrs. Read was passionately fond of music, and after the doctors had pronounced her malady incurable, her son, William D. Read, conceived the idea of bringing to her bedside the harmonies in which she delighted. To this end he secured a phonograph with many wax cylinders, prepared at Edison's laboratory, at Llewellyn Park, New Jersey, whereon people, world-renowned for their musical attainments, had left the impress of their voices or the tones of their instruments. The phonograph was set up on a stand at Mrs. Read's bedside, and the hollow glass bulbs at the end of the connecting tube were placed at the dying woman's ears. At once she forgot her pain in listening to the music of the masters.

The phonograph exactly produced cornet solos, duets for flute and piano, and piano and clarionet, with some fine bursts from the most famous reed orchestras. Then Mrs. Read was able to hear the solos of the greatest singers, clear, distinct, and beautifully modulated, and her eyes filled with tears as a grand voice softly sang to her the folk-lore songs of her childhood's days.

When the music began to lose its soothing, by reason of repetition, Mr. Read induced the members of the First Regiment band, of the Arion brass quintette and of Blum's band in this city, to play into the instrument, so that their best harmonies might be heard by the mother on her bed of pain. Several masters of the guitar and mandolin rendered Spanish arias, which were exactly reproduced by the phonograph

in the sick-room. Mrs. Read was also serenaded in this way by some of the city's sweetest singers; and the music and songs thus furnished did more than anything else to alleviate her suffering. She kept the instrument by her side for hours every day, having it repeat again and again her favorite productions.

It was the desire of the family to preserve the tones of the mother's voice after she was gone, so she was induced to talk into the receiver of the instrument. The wax cylinders recorded not only every word, but every tone and modulation of her voice. The few words she spoke while impressed with the fact that death was close at hand, will be treasured in her family as if they were the mother's last message to those left behind. Whenever the occasion fits, the members of the household will gather about the phonograph and hear Mrs. Read's voice, as if she herself had come out of the past and back from the grave.

In an interview with the dead woman's son, he said that the thought that he could hear his mother's voice whenever he desired, in large measure assuaged the grief he felt at her death. He also expressed much pleasure because his filial thoughtfulness had done so much to make his mother's last hours freer from pain.

Among the Mongols.

WHILE in Shanghai, China, Dr. E. P. Thwing interviewed an exhibitor of the phonograph, and gives the following description of the scene. He says: "Secretary Wishard, traveling in the interests of the Y. M. C. A., first recited a dozen lines in English, beginning 'Tis weary watching wave by wave,' with excellent effect. I was next called up to the platform and gave the machine a dose of mediæval Latin, the prayer of Mary, Queen of Scots, before her execution. The next man happened to be a German. He gave a tonic or Teutonic

dose to the patient—that is, the patient phonograph. The next man talked Gaelic. That evidently riled up things. But the crank still turned and another poured in Chinese, sharp and strong. Dominie Goodrich, of Tungchow, sang to the long-suffering instrument to quiet it, and then Dr. Wright, of London, who talks Arabic, pitched in strangely sounding sentences in that tongue. How many more languages were used I cannot say, but when the stream turned the other way, and the phonograph had its say, it proved itself a veritable polyglot. The peculiarities of each voice were preserved. Some voices were rather faint or thick, but others quite clear and sonorous. A day or two later I was favored with some bottled-up American music eighteen months old. I listened to the manager's introduction of the band, which was playing in New Jersey at the time, and then heard the music. It was from a piano and stringed instruments. To test its clearness and volume of sound, I left the room, crossed the hallway into another room and closed the door. Still the music was heard, though softened by the distance. It seemed to be a voice of the long past as well as from the far distant home land, 9,000 miles away, over the blue Pacific and the broad American continent. It furnished food for reflection as to the possibilities of science in the future."

Who Needs It Most?

AT the present time it is said that the chief demand for the phonograph comes from merchants, lawyers, and writers. In Boston a large firm has a phonographic room, which each partner of the firm uses at pleasure. He alone, talks without being interrupted, and applies and removes his own cylinders. This enables the other two partners of the firm to dictate to the two

typewriters employed by the concern, and during the process of dictation to make six or eight hours' work with the phonograph. In this manner everyone in the firm saves from two to four hours every day, which he can apply to other purposes.

The phonograph is of the greatest use to the stenographer, copyist and typewriter. Very few men dictate well. Some talk too fast, others too slow. Some are bad pronouncers, and others have faulty accents. Some are nervous and fidgety, others are excitable and ill-tempered. The phonograph records all utterances perfectly, and enables the copyist or typewriter to write it out in any desired fashion. The cylinder will repeat any word, and will go as fast or as slow as may be wished by the operator. In instances where inquiry was made it was learned that a typewriter working with a phonograph could do fifty per cent. more work than could be done from mere dictation. Nor should it be forgotten that these wax cylinders are practically indestructible, and that a statement inscribed upon them can be kept for an unlimited period for the purpose of reference.

The Telephone.

It is said that the work in connection with the establishment of telephonic communication between London and Paris is being pushed forward very rapidly on the English side of the Channel, and has made such satisfactory progress during the last few weeks that it is reported that communication will be established early in the new year, probably as early as January. Some alterations, however, have been decided upon in reference to the route to be taken by the cable. Instead of crossing the Channel and touching the English coast near Hythe, it has been decided to land it at St. Margaret's Bay, where it will be connected with a special wire running from this point via Dover, Folkestone, Ashford, and Maidstone to London.

FAMOUS ELECTRICAL IMPROVEMENTS.

NOVEL DEVICES THAT ARE FACILITATING MAN'S WORK AND PROMOTING THE
WORLD'S PROGRESS.

The Incandescent Lamp.



NO portion of his work is Mr. Edison more extensively known to the general public than through that connected with the incandescent lamp, with the single exception, perhaps, of the phonograph, which has of late brought him world-wide fame. Experimental or laboratory incandescent lamps have been made before Mr. Edison attacked the problem of producing one which should be commercially efficient. He saw, however, with the insight of genius, that the subdivision of the electric light was to be attained only by means of a lamp having a "high resistance filament," and working on these lines he finally succeeded, after an immense amount of patient research and experimenting, in producing a practical incandescent lamp for commercial use.

A few of these experiments may be traced. At first he tried making filaments of platinum, iridium, and other rare metals, then threads rubbed with plumbago, coal tar, and similar substances, and later a carbon spiral. The next step was the famous carbonized paper horseshoe filament, and this carried him a long way on the uphill journey he was making. Finally he turned his attention to vegetable fibre, and amongst them he found the ideal material that he had been searching for. In his experiments, on which upward of \$100,000 was expended, he tried every substance he could find in the animal, vegetable, and mineral kingdoms, and the two hemispheres were ransacked by his agents in search of substances from which fibres could be extracted. It was found that there are no less than 1,200 varieties of bamboo, of which only 300 are useful for

any purpose. These gave many experiments. Mr. Edison discovered that a form of bamboo, which grows only in a certain district of Japan, gave him just what he required. Only a very small portion of each of the canes can be used, and they have to be gathered at a certain growth, and seasoned in a certain manner. The fibres are taken from the interior of the bamboo, and carbonized by a special treatment. In this manner all volatile matters are thrown off, and a cellular structure is left behind, giving a filament of very high resistance, which, as intimated above, is the feature of paramount importance in the successful, economical, commercial incandescent lamp.

Mr. Edison has extended his investigations and inventive skill into all fields of electric lighting, and in addition to the large amount of work done by him in dynamos and incandescent lamps, he has elaborated several complete systems of distribution, in which every detail is worked out in harmony with the whole. There are many ingenious adaptations of scientific laws in the various portions of these systems, in which the best known are the Edison "three-wire system," "municipal system" (in which incandescent lamps are used in series on the same circuit or with arc lamps), and the "system of direct conversion." Few patents taken out by Mr. Edison are of greater scope and value than those covering his methods of distributing electricity for light and power. The Edison electric lighting industries have required, for example, in the United States alone, over 700 miles of underground conductors. Although Mr. Edison devoted himself, for a time, almost exclusively to incandescent lighting, he has, nevertheless, done some work in arc lamps, and has taken out several patents in this direction.

As a Letter-Writer.

R. EDISON believes that the most important use of the phonograph in the future will be for epistolary purposes—phonograms being sent by mail instead of letters.

Each of these little mailing cylinders can be peeled, thin as it is, half-a-dozen times by the usual attachment of the phonograph for that purpose. It costs only three cents to begin with, and you can hardly get note paper for less than half a cent a sheet. The cost of the necessary mailing cases will not exceed that of envelopes in practice. Mr. Edison thinks that eventually newspapers will be set up by a combination of the phonograph and the type-setting machine. Editors will read off into phonographs all the copy brought in, editing the copy as they go along by changing it to suit themselves in the reading, and by mentioning the punctuation marks, the paragraphs and the capital letters. The compositor will put the cylinder with his "take" on another phonograph, and, listening to the dictation from the machine, will translate it directly into type by the keys of the piano-like mechanical type-setter.

In Missionary Service.

THE phonograph in China is a missionary. One mandarin of the rank of the blue button bought one and went to work using it. It was an eye-opener. He was amazed at its mysterious delicacy and power. If Americans could produce such a marvelous creation, their language and literature were worth study. So he, sixty-one years of age, went to work learning the English alphabet. He also bought three more phonographs at \$150 each, and forwarded them to the imperial court in care of his brother, a high officer, who has access to the son of heaven and is not slow in bringing before his au-

gust majesty the possible rival of the long revered ancestral tablet. It is one thing to bow to a bit of wood with the name or words of a deceased father on its painted surface. It is quite another thing to hear again the real voice and tones of the long dead uttering its loving benediction or thundering out its authoritative menace.

— Electricity for Naval Uses.

GREAT interest is taken in naval circles on the possibilities of the application of electricity to naval uses. The Government has taken the matter up, and proposes to institute a series of lectures by recognized experts extending over four months, for the benefit of naval officers, on the theory and use of electricity. Particular attention will be paid to the various systems of electric lighting.

Quadruplex Telegraph.

MR. EDISON devised his wonderful quadruplex in 1874, again doubling the capacity of a single wire, and enabling the simultaneous transmission of two messages each way. The principle involved is that of working over the line with two currents that differ from each other in strength or nature, so that they will only affect instruments adapted to respond to just such currents and no others. By combining instruments that respond only to variations in the strength of current with instruments that respond only to change in the direction of current, and by grouping a pair of such at each end of the line, the quadruplex is the result; so that there will be two sending and two receiving operators at each end, or eight in all, kept busy upon a single wire. It has been estimated that the use of the quadruplex has saved in this country alone not less than \$15,000,000 for wires that otherwise would have been necessary for the transaction of business.

The Phonograph at Clinics.

AMONG the many uses which have been proposed for the phonograph one has been found that is likely to become practical. A prominent London hospital surgeon has lately employed the phonograph to record the characteristic changes in voice sounds which mark a variety of diseases. The experiments were entirely successful, for the machine reproduced the characteristic vocalization of some diseases with realistic effect. The whoop of the whooping-cough and the intervening cries of the little patient, and also the hoarse utterances of those suffering from acute or chronic diseases of the throat or lungs were vividly reproduced. This new application of the phonograph to the purposes of diagnostic and chemical instruction will revolutionize chemical teaching in medical colleges, since it will be possible to place a series of cylinders in every medical lecture-room, which would give students a lifelike reproduction of the characteristic sounds of persons suffering from the many throat and lung diseases.

The Edison Meter.

ONE of the principal difficulties met with at an early date in the history of commercial electric lighting was the absence of any method of registering in a faithful manner the quantity of current supplied to each consumer. Mr. Edison set himself to supply this necessary feature of a central station system, and thoroughly sifted the subject in his usual painstaking manner. Many experiments were made with all sorts of mechanism, motors, clockwork, electro-magnets, springs, heat, electrolysis, electro-deposition, etc. Finally, the Edison chemical meter was evolved, and this ingenious piece of apparatus has done its work faithfully for more than eight years. Its action depends

upon scientific laws, more immutable than those of the Medes and Persians, and no such damaging charges can be laid at its door as are so often made against the unscrupulous, irresponsible gas meter. It consists of a small glass cell, containing a solution in which two zinc plates are immersed. A certain proportion of the current entering the building is diverted through this combination, and an electroplating action is set up in the cell, zinc being deposited on one plate from the other. According to a well-known scientific law, a current of certain strength will deposit just so much zinc in a given time, no more and no less. Therefore, it is easy to see that if the plates are periodically weighed, the amount of current supplied between the time of weighing can be calculated to a nicety.

Edison Dynamos.

THE electric lighting field Mr. Edison has made peculiarly his own, so much so that, in the popular mind, his work in this direction has become far more prominent than the vast amount he has done in other directions. He was the first to appreciate the importance of making dynamos with massive field magnets. The general principles of the dynamo and its mechanical construction were well understood when Edison commenced his famous experiments with incandescent lighting, but there had been a general tendency to make the field magnets of those earlier, crude machines very light, and he radically changed dynamo practice in this respect, as the increased efficiency which he obtained with massive field magnets was at once apparent. He designed the first large steam dynamos, and the first experimental one which was built at Menlo Park caused considerable excitement when it brought up to candle-power some seven hundred lamps scattered about the buildings and streets of the village. In 1881 he built a dynamo weighing twenty-seven

tons, the armature alone, which was built of bars of copper instead of wires, weighing six tons. This dynamo was exhibited at Paris, London, Milan, and New York, creating

everywhere a wonderful sensation, and it is a good example of the characteristic fearlessness with which Edison strikes out from the beaten paths of research and practice.

TELEGRAPHING FROM A MOVING TRAIN.

THE "grasshopper telegraph," as it is sometimes called, is the joint work of Mr. Edison and Mr. W. Wiley Smith. The result primarily aimed at is communication

line consists of an ordinary battery, an induction coil with vibrator, a Morse key and a pair of telephone receivers. By means of the induction coil, the current from the bat-



SENDING A MESSAGE BY THE TRAIN TELEGRAPH.

between telegraphic stations and moving trains. The great feature of this system is the absence of any special wire between or along the tracks. That wondrous phase of electrical phenomena, called induction, serves to transfer the currents from the apparatus in the train to the ordinary Morse wires alongside the track, no other medium than the air being required to facilitate the transfer. The currents which are thus induced in the wires do not in any way interfere with the ordinary business which is being carried on over them. The apparatus on the train and at the stations along the

tory is transformed into a rapidly alternating, highly penetrative current, capable of producing a similar current in neighboring wires or apparatus. The effect is a continuous humming sound heard in the phonetic receivers, this being broken into the dots and dashes of the Morse system by means of the key. The roofs of the cars are all connected together and to the instruments, and these are connected to the earth through the car-wheels and track. By means of this simple and inexpensive system, messages have been transmitted across an air space of 580 feet, intervening between the wires and the cars.

PHONOGRAPH CHAT.

THE managers of the New York Phonograph Co. are fast bringing it into the lead as the banner Company—the result of pluck, good judgment, and indefatigable work.

MR. N. E. RUSSELL, General Agent of the "Parent Co.," is making a tour among the "Locals." We doubt not that his visits will result beneficially to all.

It is surprising how many men have discovered an heretofore unknown talent for "inventing" since the phonograph was introduced. To be sure, their efforts generally result in a poor imitation of the real article; but if they can only add a wheel or change the shape, they are satisfied; and, after all, it amuses them.

A LETTER was received, not long ago, by one of the agencies, containing an order for "three cans of talk," to be used for entertaining guests at a banquet. Thus are we getting nearer and closer to the commercial millennium. But, great Scott! analyze the thought—talk by measure!

ALL "experts," hereafter, will require a certificate, signed by competent authority, stating that they are such, before the N. A. P. Co. will recommend them for positions. Heretofore the class of men filling this important position have not been at all times fully up to the standard.

THE new cylinder is a beauty, and is receiving praise from all quarters. It is of uniform length, and the records are without scratch. It costs a little more, but is worth it.

There is a man in the phonograph business who is so expert that he can talk to a pine board, and make a "record." When he sings through a knot-hole, the very fibres rattle. At least, so says Brother Clephane, and he ought to know.

Up to the beginning of October, the phonograph toys had not reached France. Orders for them had to be sent to New York.

THEY are running motors for electric lighting by wind in France.

IN Berlin, March 31, 1888, there were 2,249 arc lamps and 45,552 incandescent; the following year there were 3,622 and 62,816, respectively. In the Leipzigerstrasse 104 arc lights burn until midnight. The same number over the Unter der Linden; 56 of them burn all night, the balance only until midnight.

AMONG the incidents in the experience of the phonograph, is a marriage. A man waited upon the minister with a phonograph. The minister spoke into the apparatus the questions, and the

bridegroom the responses, of the marriage ceremony. The impression was then posted to the bride, some hundreds of miles away, and she and the minister of her village went through the same process, the last minister pronouncing the couple man and wife.

WHAT an everlasting idiot a clever man can make of himself when intoxicated! Under such circumstances your phonograph is a real temperance lecturer, inasmuch as it would record the utterances of Philip drunk, and grind them out into Philip's sober ears. The boastfulness, the absurd lack of sense in the speeches, the insane jokes, the ridiculous conclusions, would point a moral to Philip's mind which no words, save his own, could.

ONE of the hardest instruments that we have tried to take is the organ, and the easiest is the English concertina. Negroes take better than white singers, because their voices have a certain sharpness or harshness about them that a white man's has not. A barking dog, squalling cat, neighing horse, and, in fact, almost any beast's or bird's voice is excellent for the good repetition on the phonograph.

PERSONAL EXPERIENCES.

Reporting by the Phonograph.

To the Editor of The Phonogram:

SINCE the publication of the report, made by means of the phonograph, of the proceedings of the Phonograph Convention, held at Chicago last May, great interest in the subject has been awakened all over the country. Classes for instruction have been formed in New York, and expert stenographers, as well as short-hand amanuenses, are daily practicing, so as to make themselves thoroughly efficient in the work. In Indiana and Illinois, court proceedings are daily being reported in this manner.

A prominent stenographer in Washington, D. C., one who has at times been engaged to assist the official reporters of the United States Senate in reporting the debates of that body, is now advertising to make reports with the phonograph at fifteen cents a folio, and with shorthand at twenty-five cents a folio. In conversation a short time since, he stated he thought of

making a proposition to Mr. D. F. Murphy, who has the contract for the reporting of the debates of the Senate, to report the entire proceedings himself with the phonograph, sending out the cylinders to be transcribed as rapidly as filled, Mr. Murphy to carefully revise the same.

The manner in which reporting is done at present (though Mr. Edison has an improved machine in view for this purpose, of which I shall speak further on) is to have two phonographs placed side by side, each with what is called a "clean" cylinder upon it. The reporter, holding the tube close to his lips, repeats in a low tone of voice the words of the different speakers as uttered, and the attendant looks after the changing of the cylinders as rapidly as they are filled. These cylinders can be transcribed by any typewriter operator, so that the transcript can be made simultaneously with the making of the record.

A company is about to be started in New York to do reporting in this manner, and instead of having the transcripts made on the typewriter, to have them made on the Mergenthaler Linotype machine, thus furnishing the matter in the handsome print produced by that instrument. The phonographs are now being used by several of the leading stenographers of New York City, in connection with the Linotype; and various newspapers, who have given orders for Linotypes, are contemplating having a "reader" to dictate all copy that comes into the office to the phonograph, the punctuation marks to be called out, proper names spelled. These cylinders, instead of "copy," to be furnished to their operators.

The improved reporting instrument referred to above, which Mr. Edison has spoken of furnishing, consists simply of two phonographs run by a light motor placed upon a small table with a battery underneath. It will be so arranged as to have the reporter shift the one speaking-tube from one machine to the other as soon as the automatic signal gives warning that

he is approaching the end of the cylinder. If those who may be interested in the subject will make a test as to the ease with which 200 and 250 words a minute can be repeated, even on the occasion of a first trial, they will be astonished at the result.

JAS. D. CLEPHANE,
Sec'y Eastern Pa. Phono. Co.

How It Works.

THE COLUMBIA PHONOGRAPH CO.
OF MARYLAND, DELAWARE, AND THE
DISTRICT OF COLUMBIA.

627 E ST., N. W., WASHINGTON, D. C.,
NOVEMBER 10, 1890.

To the Editor of The Phonogram:

The Columbia Phonograph Company is prospering. We paid our third dividend on October 13, 1890. We have phonographs and graphophones in nearly every Department of the United States Government—between fifty and sixty in the Capitol alone, in the hands of senators, members and officials, and several hundred private users. The commercial branch of the enterprise is active, and we are making new rentals frequently.

We have more than one hundred nickel-in-the-slot phonographs on exhibition in the various drug-stores, hotels, depots, etc., in our territory, and find these machines profitable.

Previous to the introduction of our excellent storage battery service, we rented very many treadle machines; now the treadle is practically dead. In the electrical department the storage batteries and motors are cared for. The batteries are changed with such regularity as to insure continued service to subscribers, who are well satisfied, and so are we.

In Washington our inspectors go from place to place on bicycles. This system enables us to attend to calls with great promptness. Our Baltimore and Washington offices are manned days, nights and Sundays, and telephone calls are always promptly answered.

We are constantly doing something in the way of advertising by means of invitations to call and see machines, etc.; but the best medium for making business is the thoroughly instructed and satisfied user of the machine, wherever he is found.

One of our new subscribers is Mrs. Gen. John A. Logan, who is an accomplished dictator.

EDWARD D. EASTON,
President.

SPLENDID TRIBUTES TO THE PHONOGRAPH,

VOICED BY THE PRACTICAL MEN OF AMERICA.

AFTER THESE WHO CAN DOUBT?

Extract from an article in the *National Stenographer*, of Chicago, March, 1890, by A. M. Haynes, Court Stenographer, Bay City, Michigan:

"As to the phonograph in business houses, it has come to stay. It has its place in the business world, and it is going to take it, to the driving out of incompetent amanuenses. People who say to the contrary simply don't know what they are talking about. Hence I advise every young shorthand man whom I meet to make himself or herself more competent in his business, and to learn other things that will make them of more value to the employers. By so doing is the only way in which they can get and keep situations. For their benefit I will state that in a business house with a large correspondence, one that I know of personally, they formerly employed a number of stenographers. They now employ one good stenographer, to whom all members of the firm dictate the correspondence that he does not know how to answer himself; he dictates his notes into the Phonograph, the cylinders are turned over to six cheap typewriters, and in another room, from a like number of phonographs, are copied on typewriters rapidly and the work done without mistakes."

133 McDONOUGH ST.,
BROOKLYN, Mar. 12, 1890.

I have used the graphophone and phonograph for about ten months. I have had the former in daily use for many weeks, and have frequently used the latter and find it equally as good. It has enabled me to get through an amount of work that I could not otherwise have accomplished. I dictate to it magazine and newspaper articles, books, reviews, and shorthand reports, which are afterwards written out for me by a typewriter. I find it a great saving of time, which was my principal object in getting it. It will be a most important aid to both stenography and typewriting, and to business men will be very valuable for the dictation of letters.

THOMAS B. PRESTON,
Of the *N. Y. Herald*

UNITED STATES SENATE,
COMMITTEE ON THE DISTRICT OF COLUMBIA.
WASHINGTON, D. C., Sept. 20, 1890.
MR. EDWARD D. EASTON, PRES. COLUMBIA PHONOGRAPH CO., 627 E ST., N. W., CITY.
My Dear Sir:

Having used one of your phonographs continually for the past six months, it gives me pleasure to state that it accomplishes all you claim. It has been in constant use. Senator Ingalls' mail averages in the neighborhood of one hundred and fifty letters a day, and with the limited force at my disposal and the great volume of other work, it would be impossible to get along without it. It

has never been out of order or needed the slightest repairs.

I feel that this is due to you, as, when it first came into the office, I did not expect very satisfactory results.

Very truly yours,
F. J. HAIG, Clerk Com. Dist. Col.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., Oct. 8, 1890.

MR. EDWARD D. EASTON, PRESIDENT COLUMBIA PHONOGRAPH CO., WASHINGTON, D. C.

Dear Sir:

I take great pleasure in furnishing you with a statement of my experience in the use of "talking-machines."

I have had two phonographs in constant use in my division in the U. S. Patent Office for considerably more than a year. The peculiar character of my work, which necessitates the use of many unusual and technical terms, is such as to put a talking-machine to the severest possible test. I am happy to say, however, that the results I have obtained have been most satisfactory and I have no hesitation in saying that the machine is an unqualified success as a mechanical stenographer.

I am now using two phonographs which are simply perfect in their action. The records are clear and distinct, and are read by my transcriber without trouble, while the copy I obtain is free from errors and excellent in every particular, much better, indeed, than I have usually obtained from stenographers.

For convenience in use the machine far surpasses the old methods of dictation. It is never tired or ill, and never wants a leave of absence, while its capacity for work is only measured by the speed and endurance of the user. You should adopt "*Semper paratus*" as the motto for the modern talking-machine. I have the honor to be, sir,

Yours very respectfully,

JAMES Q. RICE,
Principal Examiner, Division 2.

ROBT. L. MATTINGLY,
COUNSELOR AT LAW,
CELINA, O., Feb. 15, 1880.

JAS. L. ANDEM, ESQ., PRESIDENT OHIO PHONOGRAPH CO.

My Dear Sir:

Your Phonogram under date of the 13th inst. has been received and very highly appreciated. It affords a new and pleasing introduction of heretofore strangers, and appeals to a matter in which I am not only interested, but over which I have been very much gratified indeed.

The communication by graphophone or phonograph either, brings men together in business matters in a more confidential relation, affording

a means of measurement of language and understanding not peculiar to any means outside of the actual presence, or the next best, the telephone. It is superior to the telephone in some respects, doing away with the irrepressible "Hello! what is it? What? What's that? Eh? What did you say?" and like proverbial telephonics.

I have but one opinion to express of the phonograph, and that is that in the office which has any important business it is simply indispensable. *The working of the instrument is a scientifically demonstrated fact, and not a problem. The mastering and getting control of the machine depends simply on the operator, and a man of ordinary intelligence, with proper instruction, can operate the same very readily.* In making myself familiar with the principles on which the machine works, and the construction of it, I can readily excuse any failure of it, because I know it is not the fault of the machine.

I have been asked, "What are the uses of the machine?" My answer is that I am daily finding new ones to put it to. It is a stenographer, at once accurate and confidential. It is a pleasant communicator of business matters, and affords a means of training in dictation, in making terse and grammatical statements, in conversation, or in propositions to a court, or in speech-making, and particularly preparing for both, ahead of the occasion. I use it not alone for my important correspondence: I use it also for taking statements from witnesses, and from my clients in their cases, and my advice to them I register, and file away the cylinders.

I should say that its uses are illimitable, and every day it presents a new use to the operator or renter of the machine.

Respectfully yours,
ROBT. L. MATTINGLY.

THE UNITED FIRE RE-INSURANCE CO.,
25 to 30 Nassau St., City.
NEW YORK, Mar. 6, 1890.

THE NEW YORK PHONOGRAPH CO., N. Y. CITY.
Gentlemen:

We have been using the phonograph for several months past, and we find the instrument of great service and well adapted for the purposes of office use. The absolute accuracy of the dictation in every case is a feature which renders the phonograph an improvement over the ordinary shorthand notes, and which we greatly appreciate.

Yours truly,
(Signed) WM. WOOD, Manager.

ATLANTA, GA., OCT. 1, 1890.
GEORGIA PHONOGRAPH CO., ATLANTA, GA.
Gentlemen:

Regarding the phonograph. In an old fairy tale a certain giant possessed a wonderful enchanted harp which, in obedience to its master's commands, could discourse the sweetest of music, and, when occasion demanded, it could talk. It used to be that children listened, wonderstricken, to the marvelous story, and felt a reverence for its magic power. But its glory has departed. It is a thing of the past. That curious little instru-

ment on my library table—the phonograph—makes the most startling of mythological fabrications sick with envy. What will it do? Listen. Will you have music? It needs no word of command, only a touch, and the rarest music the world has produced entrances you. The voice of a friend? I see the tears in your eyes as you hear the pathetic little story as she told it. The laugh of a child? Of course you cannot help laughing, it is such a contagious ripple. If you care for the children's voices, hear the baby say "If I should die before I wake." He will know, when he grows to be a man, how he used to say, "Now I lay me down to sleep."

What do we think of it? It is a part of our family: we could not do without it. It always responds cheerfully to our call; entertains our friends, and serves to drive dull care away, and helps to make us better from day to day.

Surely if its merits were more generally known your company could not supply the demand for this most wonderful invention of the 19th century.

Yours very truly,
F. B. SHEPARD.

READING NOTICES.

* * * We call attention to the advertisement of The Home Medication Company, 88 Fifth Avenue, New York, which appears in this issue.

This Company, we understand, has been organized for the purpose of placing upon the market Toilet Preparations and Remedial Agencies manufactured under the personal supervision of their own physician and chemist, a practitioner of over twenty years' standing in this city. As most of them have been used by him for many years, in his own practice, and always with beneficial results, and as none but the purest ingredients are used in their manufacture, the Company's preparations should command the confidence of the public.

We are informed that ladies calling upon them will receive valuable information as to the proper care of their complexion, this particular department being presided over by a lady of large experience in these matters. * * *

* * * The demand for reduplicating machines, which has within the last few years been very large, has brought into the market a number of machines designed for this purpose, all more or less practical and useful. We have examined the merits claimed by each, and the result of our experience shows the one with the greatest commercial value to be that known as the Edison Mimeograph, manufactured by the A. B. Dick Company, of Chicago, New York, and Philadelphia. The Mimeograph is an improvement by the renowned inventor, Mr. Thos. A. Edison, upon his earlier invention, the Electric Pen; and, in a word, we can say the machine is simple and cleanly in its operation, and marvelous in its accomplishments. It is capable of producing, in almost unlimited numbers, fac-similes of any handwriting or typewriting, music, drawing, sketch or design, and that with wonderful rapidity. * * *

PHONOGRAPH COMPANIES

Contemplating purchases of ELECTRIC BATTERIES should wait for our price-list and particulars of the

Enholm Primary Battery.

Four sizes of 150, 225, 300 and 900 ampère hours each (special Phonograph types) will be ready shortly.

YOU WILL WANT THEM,

Because they are superior to ANY Primary or Storage Battery in
**Weight, Compactness, Simplicity, Reliability, Unvarying Results,
ECONOMY OF MAINTENANCE,**

AND THE LAST HOUR'S WORK WILL EQUAL THE FIRST.

We have secured the services of CONVERSE D. MARSH, whose connection with the Phonograph Companies dates from the beginning of the business. He will give this department special attention. Write for Phonograph Catalogue.

BRYAN, ENHOLM & CO.,

IVAR H. ENHOLM,
Electrician.

ELECTRICAL EXCHANGE BUILDING,

Liberty, Washington and Cedar Sts., New York.

Whipple's Reports.

A BUSINESS REVIEW OF THE ELECTRICAL WORLD.

THESE REPORTS CONTAIN EACH MONTH ALL THE

== New Stations * * New Companies * * New Roads ==

THEY ALSO GIVE YOU ALL THE

Equipment Contemplated. Equipment Put In. New Incorporations. New Isolated Plants.
Plants in Course of Erection. Changes in Officials. Changes in Titles.

ALSO, COMPLETE REVISED LISTS OF ALL

Central Stations * * Gas Companies * * Street Railways.

A Feature of these Reports is the only Authentic Review of the Financial Operations of the Electric, Gas and Street Railway Worlds published.

You Will Find the STOCK MARKET Invaluable to Your Business.

PUBLIC BIDS and PUBLIC CONTRACTS are recorded each month, and THE GENERAL TRADE will keep you posted on the business movements of your competitors.

SUBSCRIPTION, IN ADVANCE, \$3.00.

ARE YOU SELLING ANYTHING?

If so, there is absolutely no other medium on earth so quick in action, so fruitful in results, so satisfactory to everybody as WHIPPLE'S REPORTS. They are bought, read thoroughly and carefully preserved by every manufacturer and dealer and consumer of Electric, Gas and Street Railway supplies of any note in America. There is scarcely a contractor in the land that does not get a look at the pages of each issue. The manager that thinks he can get along without them is so infrequently heard of that he "does not count." The chances of any advertisement in these Reports not being seen or read in every corner of the North American Continent within a few days after publication are infinitesimal. The reason it will pay you to advertise with us is because we put you directly before all the buyers. What more can you ask?

THE FOOKERY,
CHICAGO.

FRED H. WHIPPLE CO.,

TEMPLE COURT,
NEW YORK.

UNDERWOOD'S
SUPERIOR
TYPEWRITER SUPPLIES,

Typewriter Ribbons.

Hammond Ribbons.

Smith Premier Ribbons.

Caligraph Ribbons.

Carbon Papers.

Pads for Yost Typewriter.

PADS AND RIBBONS IN ALL COLORS.

FOR ALL STYLES OF WRITING MACHINES.

Supplies for All Kinds of Machines.

JOHN UNDERWOOD & CO.,

*163 La Salle St., Chicago, Ill.
10 Johnston St., Toronto, Ont.*

30 VESEY ST., NEW YORK.

SEND FOR PRICE-LIST.

The BAR-LOCK TYPEWRITER,
The Modern Writing Machine.

THE IDEAL
MACHINE FOR USE



WITH THE
PHONOGRAPH.

COMBINES THE FOLLOWING LABOR-SAVING FEATURES FOUND IN NO
OTHER WRITING MACHINES:

*Writing Always in Plain Sight,
Automatic Line Spacing,*

*Powerful Manifolders,
Light Running,*

*Automatic Ribbon Feed Reverse,
Permanent Alignment,*

*Unlimited Speed,
Durable.*

THE No. 2 MACHINE TAKES PAPER 9 IN. WIDE, AND WRITES A LINE 8 IN. LONG.

Price, \$100 Complete.

THE No. 3 MACHINE TAKES PAPER 14 IN. WIDE, AND WRITES A LINE 13 IN. LONG.

Price, \$110 Complete.

SEND FOR A CATALOGUE.

The Columbia Typewriter Manufacturing Co.,
379 BROADWAY, NEW YORK.